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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,356	02/01/2001	Shinichi Miyazaki	0033-0689P	5541

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EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

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DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/773,356

Applicant(s)

MIYAZAKI ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Starinshak (US 5,279,695). As best depicted in Figure 1, Starinshak is directed to a 1x12 cord construction for use in pneumatic tires. The reference further states that the interstices of the cord are filled with styrene polybutadiene rubber (SPBD) in order to improve metal adhesion and corrosion resistance by one of two methods: (a) coating the core filaments with SPBD having a melting temperature below the tire vulcanization temperature or (b) constructing a cord by incorporating one or more SPBD monofilaments by standard bunching, each monofilament having a melting temperature below the tire vulcanization temperature into the core (Column 4, Lines 10-51). In both instances, Starinshak suggests that the SPBD have a melting temperature between 70 °C and 200 °C, which is almost the identical range of the claimed invention (Column 3, Lines 35-38). Additionally, Starinshak is directed to a plurality of cord constructions such that at least three steel filaments are present (Column 3, Lines 45-49). Thus, the

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reference clearly suggests a hybrid or composite cord formed of steel and a polymer having a melting point in accordance to the limitations of the claimed invention, wherein the cord has a 1xn construction.

Regarding claim 2, although Starinshak does not give a specific range for the metallic filament diameter, all of the embodiments detailed by the reference contain metallic filament diameters that fall within the claimed range (Column 7, Lines 64-66 and Column 8, Lines 15-17 and lines 60-62).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Starinshak in view of Nakamura (WO 85/02210). Starinshak discloses a 1xn tire construction formed of at least three steel filaments and one or more SPBD monofilaments, such that the SPBD monofilament will melt and disperse throughout the interstices between said steel filaments during vulcanization of the tire (Column 6, Lines 1-11). The reference further suggests that a blend of rubbers can be used and suggests the use of various polydiene rubbers such as polybutadiene, polyisoprene, and styrene butadiene (Column 6, Lines 12-20). It should be noted that this cord construction improves rubber to metal adhesion and corrosion resistance. However, Starinshak is completely silent to the use of polyethylene or polypropylene. Nakamura,

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on the other hand, describes the use of a wide variety of non-metallic, core materials that have a lower melting temperature than the rubber article (tire). In particular, Nakamura suggests the use of natural rubber, styrene butadiene rubber, polyisoprene rubber, polyethylene, and polypropylene to improve the rubber to metal adhesion and corrosion resistance. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to use either polyethylene or polypropylene in the cord construction of Starinshak, as set forth below.

In describing the non-metallic core filaments, Starinshak discloses the use of polybutadiene rubber, polyisoprene rubber, and styrene butadiene rubber such that the melting temperature of the core filament(s) is below the tire vulcanization temperature and the core filament(s) disperse into the interstices upon being exposed to said vulcanization temperature. Although the reference is silent as to the use of plastic filaments, Nakamura specifically suggests the use of rubber, plastic, and organic fibers to fill the interstices of a steel cord in order to improve rubber to metal adhesion and prevent corrosion (Abstract). In particular, Nakamura describes the use of polybutadiene rubber, polyisoprene rubber, and styrene butadiene rubber (same rubbers as Starinshak) and the use of polyethylene and polypropylene. Table 1 of Nakamura describes the polyethylene as having a melting point between 125 °C and 135 °C and the polypropylene as having a melting point between 165 °C and 173 °C. Thus, one of ordinary skill in the art at the time of the invention would have readily appreciated the use of polyethylene or polypropylene to fill the interstices in the cord construction of Starinshak in view of Nakamura since Nakamura describes the use of

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rubber and plastic core materials as alternatives in order to improve the rubber to metal adhesion and the corrosion resistance.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bundou (JP 06049784) describes a 1xn composite cord for use in pneumatic tires comprising three to five steel filaments and one or more organic fiber filaments. Falcy (US 3,686,855) discloses a cable formed of a non-metallic, thermoplastic core, such as polyethylene or polyisoprene, in which metallic strands are spirally wound thereon. Komatsuki (US 5,551,498) teaches a 1x5 cord construction formed of two aramid strands and three steel strands, as best depicted in Figure 6.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Justin Fischer

May 14, 2002

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700